

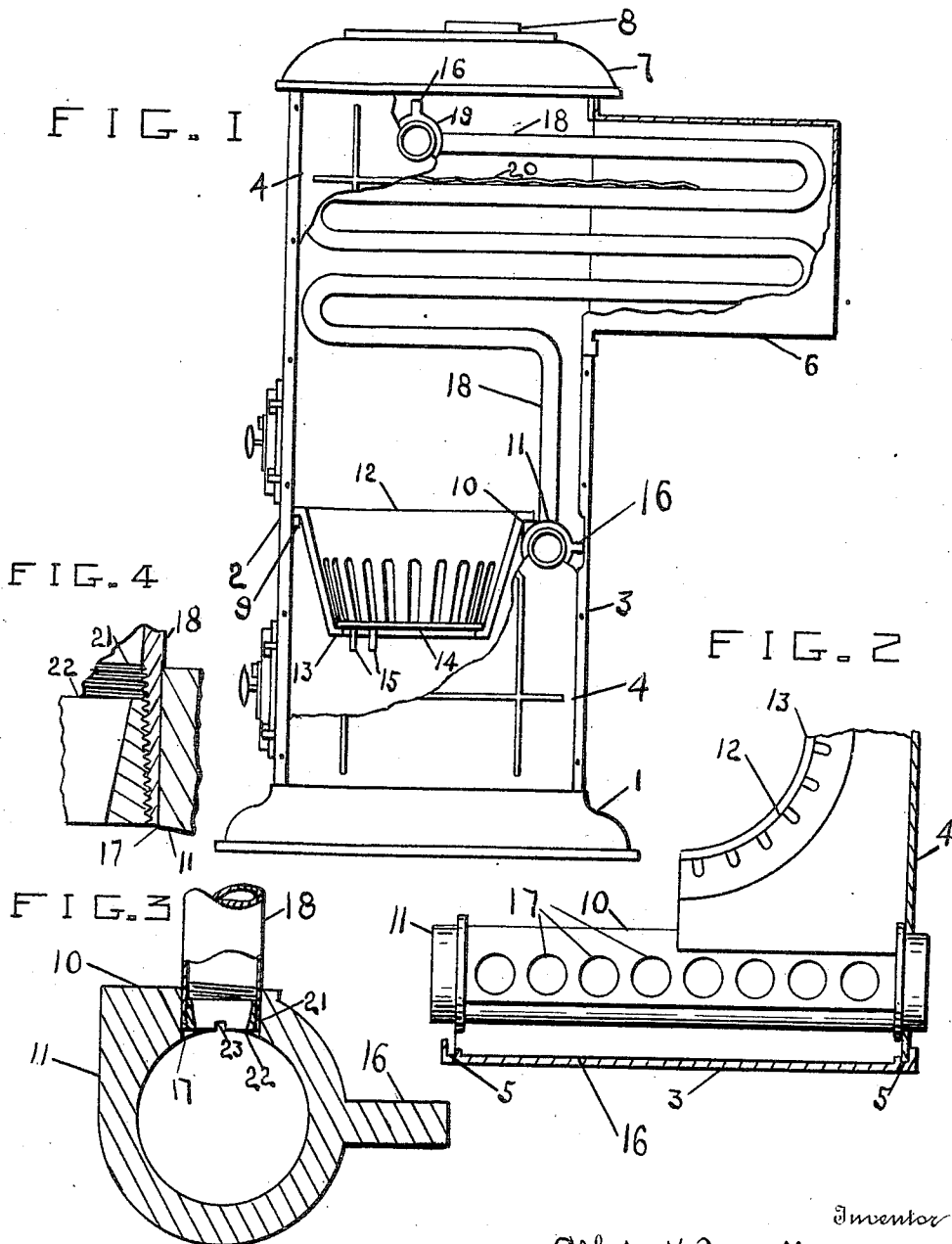
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HEATER.

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971,134.

Patented Sept. 27, 1910.



Witnesses
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HEATER.

971,134.

Specification of Letters Patent. Patented Sept. 27, 1910.

Application filed September 4, 1909. Serial No. 516,218.

To all whom it may concern:

Be it known that I, ALFRED H. MERRILL, a citizen of the United States, residing at Toledo, Lucas county, Ohio, have invented 5 new and useful Heaters, of which the following is a specification.

This invention relates to a heater, and more especially to features of mounting and assembling of the elements therein.

10 This invention has utility when embodied in a water heater for tank heating purposes or for the heating of residences, street cars, etc.

Referring to the drawings: Figure 1 is 15 a side elevation, with parts broken away showing an embodiment of the invention in a water heater; Fig. 2 is a fragmentary section looking down on the fire pot, the pipes being removed; Fig. 3 is a sectional 20 view on an enlarged scale of the manifold; and Fig. 4 is an enlarged detail view in section showing the mounting of the pipes in the manifolds.

The heater or water tube coil structure is 25 provided with a housing comprising the base 1, the front housing wall 2, the rear housing wall 3, between which are held the side housing walls 4 by engagement in the grooves 5 of the front and rear walls. The 30 rear wall 3 is shown as provided with an extension 6 inclosing heating duct addition beyond normal housing. The housing is provided with the top 7 with outlet passage 8 for the flue gases.

35 The front housing wall 2 is provided with a lug or ledge 9, while a similar ledge 10 is provided by the manifold 11, so that together these ledges are effective to provide support for the sectional fire pot 12, the sections of which may be introduced through 40 the door in the front wall 2. The lower portion of the fire pot 12 has the inwardly extending flange 13 forming a support for the movable grate 14, which grate may be 45 actuated by engaging the lugs 15 thereof with a shaker.

On the opposite side of the manifold 11 to the ledge 10, is the wing or closure extension 16, which serves to space the manifold 50 11 from the rear housing wall 3, and additionally prevent upward travel of air from the ashpit around the fire pot, thereby confining the draft through the fire pot.

The manifold 11 is provided with a series 55 of straight or smooth bored cylindrical holes 17 in each of which is mounted the exte-

riorly smooth cylindrical end of a pipe 18, which follows a tortuous path above the fire pot to afford a maximum of heating area in the line of flue gas travel from the combustion chamber above the fire pot. To increase this heating surface beyond that permissible by the housing within desirable height limits, the extension 6 is provided laterally. Each of the tortuous pipes 18 65 from manifold 11 terminates in manifold 19. This manifold 19 is made from the same mold as manifold 11, a feature of economy in manufacture, as are the features of fire pot mounting and manifold mounting in 70 assembled housing. To insure effective travel of the hot gases from the fire pot about the tortuous pipes of the circulating duct system, the baffle plate 20 is disposed to cause the gases to travel out and up through 75 extension 6 on their way to flue outlet 8.

The pipes 18 are interiorly threaded on bevel 21, and when inserted in openings 17, the ferrule 22, exteriorly threaded to coact with threads 21, has a tool engage in its recesses 23 to drive it into the copper pipe 18 80 and thus removably hold the pipe in the cast iron manifold 11. In case of any tube or pipe 18 giving out, access may be had from end of manifold to remove its ferrule 22 and 85 thus allow of ready slipping out of the pipe from the manifolds.

In assembling, the coils or pipes 18 are fitted in the manifolds, the manifolds placed in the openings of one housing wall 4, the 90 opposite housing wall 4 is brought into position, and then these walls held by the front and back walls which have the side wall engaging grooves 5 with provision for bolting in such assembled relation. The ribbed features of the walls afford stiffening means as well as effective anchor for non-conducting cement for jacketing the heater.

The structure provides a simple and effective mounting for the circulating duct as 100 to the manifolds as well as of the manifolds, all entering into the heater combination and contributing toward these features of practical utility.

What is claimed and it is desired to secure 105 by Letters Patent is:

1. The combination in a water tube coil heater of a lower horizontally disposed manifold having its lateral openings upwardly and provided with a firepot sustaining ledge, 110 vertical parallel coils rising from said openings, an upper manifold to which said coils

deliver, a pair of one-piece opposing side walls, each having a pair of openings for receiving one end of each manifold, said manifolds being provided with shoulders to abut
5 said walls and maintain the separate walls spaced, and a second pair of walls for holding said side walls in position against the manifolds.

2. The combination in a water tube coil
10 heater having a housing provided with a fuel burner in the lower part thereof, a smoke outlet at the top, and an extension at one side above the fuel burner, of a baffle in said housing adapted to deflect the products
15 of combustion into said extension, a lower

horizontally disposed manifold forming a support for said fuel burner and having its lateral openings upwardly, vertical parallel coils rising from said openings and extending into said extension, an upper manifold 20 to which said coils deliver, said manifolds being provided with shoulders to abut the side walls of said housing and adapted to maintain said walls in spaced relation.

In testimony whereof I affix my signature 25
in the presence of two witnesses.

ALFRED H. MERRILL.

Witnesses:

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